

CLAIMS

1. (Currently amended) An interactive method for allowing a user to obtain image data for diagnostic purposes from a server having access to stored data, comprising:
 - connecting a user's computer to the server over a communication network;
 - receiving from the server image reconstruction software for the user's computer;
 - requesting specific image data for transmission from the server to the user's computer;
 - progressively transmitting the requested specific image data over the network from the server to user's computer; and
 - repeatedly reconstructing a-diagnostic quality images, from the progressively received image data, at different quality levels, using the reconstruction software on the user's computer.
2. (Original) A method according to claim 1, comprising image processing said reconstructed image using said reconstruction software on said user's computer.
3. (Original) A method according to claim 1, comprising:
 - receiving from the server image selection software for the user's computer,
 - wherein said image selection software is used for said requesting.
4. (Original) A method according to claim 3, wherein said image selection software controls the transmission of the image data.
5. (Original) A method according to claim 3, wherein said image selection software displays images from said server.
6. (Original) A method according to claim 3, wherein said image selection software and said reconstruction software are received together.
7. (Original) A method according to claim 3, wherein said image selection software and said reconstruction software comprise a single software unit.

8. (Original) A method according to claim 3, wherein said image selection software is operative to stop the transmission of the data, after at least a low quality image is reconstructed and viewed from said data.
9. (Original) A method according to claim 8, wherein said image selection software is operative to restart the transmission of the data of the entire image, after said stopping.
10. (Original) A method according to claim 3, wherein said image selection software controls processing of data at said server, prior to its transmission.
11. (Original) A method according to claim 10, wherein said processing comprises reducing said data from a large bit-per-pixel ratio to a small bit per pixel ratio, independently of details of said request, except an identification of the data requested.
12. (Original) A method according to claims 10, comprising interactively providing user input to said image selection software, to affect said control.
13. (Original) A method according to claim 3, wherein said image selection software controls said server to selectively transmit only portions of the image data.
14. (Original) A method according to claim 3, wherein the image selection software comprises application software coded using a device independent network programming language.
15. (Original) A method according to claim 3, wherein the reconstruction software comprises application software coded using a device independent network programming language.
16. (Original) A method according to claim 14, wherein said language comprises Java.
17. (Original) A method according to claim 14, wherein said language comprises ActiveX.
18. (Original) A method according to claim 1, wherein reconstructing comprises:
reconstructing images of progressively improving quality from the progressively received data;

using the produced improved images of progressively produced quality to decide on processing of the images, wherein said processing comprises gray-level windowing; and processing said images, prior to the progressively received data being completely received.

19. (Original) A method according to claim 1, wherein reconstructing comprises:

reconstructing images of progressively improving quality from the progressively received data;

using the produced improved images of progressively produced quality to decide on processing of the images; and

interactively selecting regions of interests in the images based on said progressively improved images, prior to the progressively received data being completely received.

20. (Original) A method according to claim 1, wherein said data is progressively transmitted while a lower quality image is being reconstructed from said data.

21-29. (Cancelled)

30. (Original) A method according to claim 11, wherein reducing the bit-per-pixel ratio comprises:

calculating an average "M" of the gray values in the image and a standard deviation "S" of said gray values; and

rescaling these values in the range $[(M-S/2)..(M+S/2)]$ to obtain a new lower number of bits per pixel.

31. (Original) A method according to claim 11, wherein reducing the bit-per-pixel ratio comprises:

estimating the mean and standard deviation of the gray levels locally; and

rescaling these values to obtain a new lower number of bits per pixel.

32. (Previously Presented) A method according to claim 1, wherein progressively transmitting the requested data over the network comprises:

recomposing the image into a pyramidal structure comprised of layers, said layers ranging sequentially from a layer having the least amount of data to a layer having the most data; and

transmitting the layers making up the pyramid individually starting with the layer with the least amount of data to enable the user to view a progressively improving image to decide on further transmission of the image.

33. (Original) A method according to claim 32, wherein recomposing the image into a pyramidal structure comprises reducing the image to provide the different layers at the transmitting end for progressive transmittal.

34. (Original) A method according to claim 33, wherein reducing comprises discarding alternate rows and columns to create an image that is a quarter of the size of the original image.

35. (Original) A method according to claim 32, comprising:

- providing a first layer with reduced resolution in the pyramidal structure;
- providing remaining layers that contain residual values with increased resolution; and
- progressively receiving the data used to provide images based on the received data of progressively improved resolution.

36. (Original) A method according to claim 1, comprising:

- compressing the requested data transmitted over the network; and
- decompressing the received required data to provide images.

37. (Original) A method according to claim 36, wherein compressing comprises spatially decorrelating the data by predicting each pixel at the current resolution using its spatial casual neighbors.

38. (Original) A method according to claim 36, wherein compressing comprises temporally decorrelating each pixel by predicting each pixel value at the current resolution using the values of temporal neighbors from previous images.

39. (Previously Presented) A method according to claim 37, wherein a predictor X used in predicting each pixel value for a single image is equal to $f(a, b, c)$, wherein a, b and c are previously predicted neighboring pixels.

40. (Original) A method according to claim 38, wherein a predictor X used in predicting each pixel value for a group of images equals $f(a, b, c, a1, b1, c1, x1)$ wherein a, b and c are previously predicted neighboring pixels in a same image and a1, b1, c1 and x1 are corresponding pixels in a previously predicted image of the image group.

41. (Original) A method according to claim 36, wherein said compressing and said decompressing use entropy coding and decoding respectively.

42. (Original) A method according to claim 41, wherein said entropy coding and decoding are accomplished using Golomb Rice entropy coding and decoding.

43. (Previously presented) An interactive method for allowing a user to obtain image data for diagnostic purposes from a server having access to stored data, comprising:

- connecting a user's computer to the server over a communication network;
- receiving from the server image reconstruction software for the user's computer;
- requesting specific image data for transmission from the server to the user's computer;
- progressively transmitting the requested specific image data over the network from the server to user's computer; and

- reconstructing a diagnostic quality image, from the progressively received image data, using the reconstruction software on the user's computer.

- wherein progressively transmitting the requested data over the network comprises:

- recomposing the image into a pyramidal structure comprised of layers, said layers ranging sequentially from a layer having the least amount of data to a layer having the most data; and

- transmitting the layers making up the pyramid individually starting with the layer with the least amount of data to enable the user to view a progressively improving image to decide on further transmission of the image,

- further comprising:

- providing a first layer with reduced resolution in the pyramidal structure;

providing remaining layers that contain residual values with increased resolution;
progressively receiving the data used to provide images based on the received data of
progressively improved resolution; and
using adaptive slicing and entropy coding and decoding of each slice for progressively
transmitting the requested specific image data, wherein said entropy coding generates a
residual matrix.

44. (Original) A method according to claim 43, wherein using adaptive slicing comprises:
scanning the obtained residual matrix into a residual vector; and
partitioning the residual vector into variable length sub vectors with a relatively
homogeneous probability distribution function.

45. (Original) A method according to claim 44, wherein partitioning comprises:
estimating the local mean and variance on the sub-vector;
sectioning the vector on high transients; and
coding each sub vector separately.

46. (Original) A method according to claim 44, wherein said compression does not increase
the size of said data.

47. (Original) A method according to claim 1 wherein connecting the user computer to the
server over a communication network comprises connecting over the Internet.

48. (Original) A method according to claim 1 wherein connecting the user computer to the
server over a communication network comprises using a dial up communication system.

49. (Original) A method according to claim 1 wherein connecting the user computer to the
server over the communication network comprises using networking facilities.

50. (Original) A method according to claim 1, wherein the stored data comprises data for a
plurality of "postage stamp" images.

51. (Original) A method according to claim 50, comprising using "postage stamp" images as a catalog for selecting those images for which no further data is to be transmitted and those images for which further data is to be transmitted.

52. (Original) A method according to claim 50, wherein said postage stamps comprise a lowest level in a pyramidal representation of said images.

53. (Original) A method according to claim 1, wherein progressively transmitting comprising serially transmitting a sequence of images of increasing resolution, each image being progressively transmitted.

54. (Original) A method according to claim 1, wherein progressively transmitting comprising transmitting data operative to reconstruct images of increasing resolution.

55. (Original) A method according to claim 1, wherein progressively transmitting the requested data over the network comprises segmenting an image into background parts and tissue parts, and transmitting the tissue parts first.

56-65. (Cancelled)

66. (Previously presented) A method according to claim 1, wherein said requesting comprises requesting after said receiving and during a same session.

67. (Previously presented) A method according to claim 1, wherein said reconstructing comprises showing progressively reconstructed images.

68. (Previously presented) A method according to claim 10, wherein said server processes said image data for enhancing transmission thereof.

69. (Previously presented) A method according to claim 1, wherein said server only transmits image data received from a data store connected to said server by a network connection.

70. (Previously presented) A method according to claim 2, wherein the image reconstruction and processing software comprises application software coded using a device independent network programming language.

71-74. (Cancelled)

75. (Previously presented) A method according to claim 3, wherein said image selection software controls said server to selectively transmit only a region of interest of said image.

76. (Previously presented) A method according to claim 1, wherein said connecting and said receiving are performed via an industry standard browser software.

77. (Previously presented) A method according to claim 1, wherein receiving from the server image reconstruction software is performed in each session in which the user receives progressively transmitted images.

78. (Previously presented) A method according to claim 1, wherein receiving from the server image reconstruction software is performed after requesting image data by the user.

79. (cancelled)

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